UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,628	11/16/2007	**Chaker N. Adra**	A0852.70000US01	1403

23628 7590 08/31/2011

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
BERTAGNA, ANGELA MARIE	
ART UNIT	**PAPER NUMBER**
1637	
MAIL DATE	**DELIVERY MODE**
08/31/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,628	ADRA, CHAKER N.	
	Examiner	Art Unit	
	Angela M. Bertagna	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/1/11 and 6/2/11*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-6,9-16 and 49* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-6,9-16 and 49* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/1/11*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

1. Applicant's response to the non-final rejection filed on February 1, 2011 and the response to the subsequent restriction requirement filed on June 2, 2011 are acknowledged. Claims 1-6, 9-16, and 49 are currently pending. In the response filed on February 1, 2011, Applicant amended claims 1, 2, 9, 10, 13, 14, and 49 and canceled claims 7, 8, and 17-19.

The following include new grounds of rejection necessitated by Applicant's amendments to the claims. Any previously made objections or rejections not reiterated below have been withdrawn. Applicant's arguments filed on February 1, 2011 have been fully considered and are discussed below. Since the new grounds of rejection were necessitated by Applicant's amendments, this office action is **FINAL**.

Election/Restrictions

2. Applicant's election of the species HTm4, in the reply filed on June 2, 2011 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the election of species requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). As noted by Applicant, claims 1-6, 9-16, and 49 read on the elected species.

Information Disclosure Statement

3. Applicant's submission of an Information Disclosure Statement on February 1, 2011 is acknowledged. A signed copy is enclosed.

Application Data Sheet

4. Applicant's submission of an Application Data Sheet on September 5, 2006 is acknowledged. It is noted that the citizenship of Inventor Adra is not consistent between the oath and the Application Data Sheet. MPEP 601.05 provides the following guidance regarding this situation:

> Pursuant to 37 CFR 1.76(d)(3), the oath or declaration under 37 CFR 1.63 or 37 CFR 1.67 governs inconsistencies with the application data sheet in the naming of inventors and setting forth their citizenship. If different inventors are listed in the application data sheet than are named in the oath or declaration for the application, the inventors named in the oath or declaration are considered to be the inventors named in the patent application. See 37 CFR 1.76(d)(3). Any change in the inventorship set forth in the oath or declaration under 37 CFR 1.63 must be by way of a request under 37 CFR 1.48(a) notwithstanding identification of the correct inventive entity in an application data sheet or supplemental application data sheet. Similarly, if the oath or declaration under 37 CFR1.63 incorrectly sets forth the citizenship of one of the inventors, that inventor must submit a supplemental oath or declaration under 37 CFR 1.67 with the correct citizenship notwithstanding the correct identification of the citizenship in an application data sheet or supplemental application data sheet.

Claim Rejections - 35 USC § 112, 1st paragraph (Scope of Enablement)

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6 and 9-16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of detecting statistically significant differences in the mRNA expression pattern observed between normal, healthy mammalian subjects and mammalian subjects known to possess a granulocyte disorder and a method for detecting the presence of chronic myelogenous leukemia in human subjects based on differential expression of

a plurality of genes, including HTm4, in bone marrow samples as described by Nowicki, does not reasonably provide enablement for detecting the presence of any granulocyte disorder in any biological sample obtained from any subject based solely on an observed statistically significant difference in the expression level of the HTm4 gene. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, have been described by the court in *In re Wands*, 8 USPQ2d 1400 (CA FC 1988). *Wands* states at page 1404:

> Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in Ex parte Forman. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

The nature of the invention

The methods of the instant claims are classified in the unpredictable arts of biochemistry and molecular biology and are drawn to methods for detecting the presence of a granulocyte disorder based on differential expression of a granulocyte-selective marker, specifically HTm4.

The breadth of the claims

The methods of the instant claims are extremely broad in scope. Claims 1-6 and 9-13 encompass detecting the presence of any granulocyte disorder (*e.g.*, asthma, atopic dermatitis, eosinophil-associated leukemias, basophil-associated leukemias, Cushing's syndrome,

eosinophilic gastrointestinal disorders, eosinophilic pneumonia, and neutrophil disorders) in any mammalian subject (*e.g.*, humans, dogs, cats, horses, goats, cows, mice, or rats of known or unknown disease status) by observing differential expression of the HTm4 gene in any biological sample obtained from the subject. Claim 14 is also very broad in scope, encompassing detecting the presence of any non-neutrophil or mast cell disorder in any mammalian subject by observing differential expression of the HTm4 gene in any biological sample obtained from the subject. Claims 15 and 16 limit the disorder to a basophil disorder and a basophil-associated cancer or tumor, respectively.

Guidance in the Specification and Working Examples

The specification generically teaches that detection of at least one differentially expressed granulocyte-selective transcript can be used to detect the presence of granulocyte disorders, such as asthma (pages 2-4 and pages 12-14). The working examples describe experiments in which granulocyte-selective transcripts, including HTm4, were identified by subjecting purified cells obtained from normal, healthy human subjects to microarray analysis and comparing the results for different blood cell types (pages 17-27). Real-time RT-PCR was used to verify the microarray results for four of the identified transcripts (page 19). However, the working examples do not demonstrate an association between altered HTm4 expression and even one of the many granulocyte disorders encompassed by the claims based on the observed expression level of any one or more of the disclosed granulocyte-selective markers. The specification and working examples also do not contain any discussion of methods for identifying and validating such an association.

State of the Prior Art and Unpredictability in the Art

As discussed in greater detail below, the prior art of Nowicki et al. (Oncogene (June 2003) 22: 3952-3963) teaches a method falling within the scope of the claimed methods.

The prior art does not teach detecting the presence of a granulocyte disorder in mammalian subjects of unknown disease status based solely on the mRNA expression level of the HTm4 gene, however.

The teachings of Erle et al. (Genome Biology (2003) 4: 232; cited previously) are indicative of the state of the art at the time of the invention and the level of unpredictability in the art. Erle teaches that microarrays and/or quantitative RT-PCR could be used to identify differences in gene expression patterns between normal subjects and subjects known to be afflicted with a granulocyte disorder, such as asthma (see pages 1-2). However, Erle cautions that asthma is a very complicated disorder and that further validation of the results obtained from microarray analysis of mRNA expression patterns is required before observed gene expression differences between a normal and asthmatic subject can be used in a stand-alone method of detecting the presence of the disorder in subjects of unknown disease status (see pages 2-3). Erle also teaches that this process is likely to be "challenging", due to the complexity of the disease, the need to obtain results from a large number of individuals in a well-designed cohort, and "the difficulties inherent in obtaining suitable tissue for study" (see page 3). Similarly, Nowicki teaches that further validation of the observed chronic myelogenous leukemia mRNA expression signature is needed before the results can be used in a stand-alone assay for detection of the presence of disease in human subjects of unknown disease status, since the disease is complex and there are differences in the cell composition of the normal and leukemia samples used in the

study (page 3961). Also, as evidenced by Nowicki (Figure 5), there is variability in the expression level of the HTm4 gene between different biological samples. Furthermore, the function of the elected HTm4 gene and its role in granulocyte disorders is not well characterized (see, for example, pages 87-88 of Ishibashi et al. (Gene (2001) 264: 87-93; newly cited) and page 2 of Tedder et al. (WO 02/062946 A2; newly cited)). More specifically, the prior art, with the exception of Nowicki, does not teach an association between HTm4 expression levels and a granulocyte disorder.

Thus, based on the teachings of Erle and Nowicki, the claimed methods are not well-developed and are associated with a high degree of unpredictability. Given the complexity of granulocyte disorders in general, the limited information regarding the relationship of HTm4 expression levels and granulocyte disorders, and the challenges inherent in extending results obtained in one species of subject to another species or to other biological samples, the full scope of the claimed methods is associated with a high degree of unpredictability.

Quantity of Experimentation

The quantity of experimentation in this area is immense, since, as discussed above, there is a very high degree of unpredictability as to whether the mRNA expression level of the HTm4 gene can be used to reliably detect the presence of a granulocyte disorder in a subject. For each of the many different granulocyte disorders and each different type of subject encompassed by the claims, the ordinary artisan would have to determine an appropriate sample for analysis and determine that the HTm4 gene is, in fact, differentially expressed to a statistically significant extent in diseased subjects compared to normal, healthy control subjects. The results for each

different subject, different granulocyte disorder, and biological sample would not necessarily extend to other subjects, biological samples, and disorders given the differences between them. Furthermore, this large quantity of unpredictable experimentation would have to be undertaken with minimal guidance from the prior art and the specification and with no guarantee of success. Accordingly, the amount of experimentation required for the ordinary artisan to practice the full scope of the claimed methods is considered to constitute an undue amount of experimentation.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

In the instant case, as discussed above, the claimed methods are broadly drawn to a method for detecting the presence of any granulocyte disorder in any mammalian subject based solely on an observation of differential mRNA expression of the HTm4 gene in a biological sample obtained from the subject. As discussed above, the claimed methods are associated with a high degree of unpredictability. Despite the breadth of the claims and their inherent unpredictability, the specification provides only minimal guidance regarding practice of the full scope of the claimed methods and provides no evidence to establish that detecting a statistically significant difference in the mRNA expression level of the HTm4 gene is sufficient for detecting the presence of a granulocyte disorder in a subject. As noted above, these aspects of the claimed methods are also not described in the prior art, with the exception of Nowicki. Finally, the quantity of experimentation required to practice the full scope of the claimed methods is very

large. Thus, given the broad claims in an unpredictable art, the large quantity of unpredictable experimentation required to practice the full scope of the claimed methods, the minimal guidance provided in the specification, the limitations of the working examples, and the negative teachings in the art, balanced only against the high skill level in the art, the inevitable conclusion is that it would require undue experimentation for one of skill in the art to successfully practice the full scope claimed methods.

Claim Rejections - 35 USC § 112, 2nd paragraph

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6, 9-16, and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-6, 9-16, and 49 are indefinite, because the recitation of GenBank Accession Numbers, *e.g.,* L35848, in independent claims 1, 14, and 49 causes the scope of the claims to be entirely unclear. As evidenced by Benson et al. (Nucleic Acids Research (2009) 37(Database issue): D26-D31; newly cited), the nucleic acid sequence recited in a GenBank record is not static and may change over time (page D29). As a result, the reference in independent claims 1, 14, and 49 to GenBank Accession numbers causes uncertainty as to the particular sequence that must be analyzed. Since the scope of claims is not constant, but rather, variable over time, they are vague and indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 4, 5, 10, 11, and 13-16 are rejected under 35 U.S.C. 102(a) as being unpatentable over Nowicki et al. (Oncogene (June 2003) 22: 3952-3963; cited previously) as evidenced by Ishibashi et al. (Gene (2001) 264: 87-93; newly cited).

These claims are drawn to a method for detecting the presence of a granulocyte disorder based on the expression level HTm4.

Regarding claims 1, 2, 4, 5, 10, 11, and 13-16, Nowicki teaches a method for detecting the presence of a granulocyte disorder, specifically chronic myelogenous leukemia, which is a basophil-associated cancer characterized by abnormally high numbers of eosinophils and basophils, that comprises using array hybridization to measure the mRNA expression level of MS4A3, which, as evidenced by Ishibashi at page 88, column 2, for example, is synonymous with HTm4, in a bone marrow sample obtained from a subject and comparing the observed mRNA expression level to a reference mRNA expression level, specifically the mRNA expression level in a normal subject (see abstract, page 3953, column 2, and Figure 3). Nowicki further teaches that the mRNA expression levels of in the chronic myelogenous leukemia subjects is higher to a statistically significant degree compared to normal subjects, and, therefore,

indicative of chronic myelogenous leukemia in the subject (page 3953 and Figure 3). Thus, claims 1, 2, 4, 5, 10, 11, and 13-16 are anticipated by Nowicki as evidenced by Ishibashi.

9. Claim 49 is rejected under 35 U.S.C. 102(b) as being anticipated by Tedder et al. (WO 2002/062946 A2; newly cited).

Claim 49 is drawn to a method for identifying a compound that alters at least one physiological property of a granulocyte.

Tedder teaches a method for identifying a compound that alters at least one physiological property of a granulocyte comprising the following steps: (i) contacting a granulocyte with a candidate compound that interacts with a granulocyte-selective marker, specifically MS4A3 (HTm4), (ii) determining at least one physiological property of the granulocyte after contact with candidate compound, and (iii) comparing the at least one physiological property of the granulocyte to at least one reference property to determine whether the candidate compound alters at least one physiological property of the granulocyte (see page 6, line 1 – page 7, line 5, pages 66-68, and pages 85-86). Thus, the teachings of Tedder anticipate the method of claim 49.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nowicki et al. (Oncogene (June 2003) 22: 3952-3963; cited previously) as evidenced by Ishibashi et al. (Gene (2001) 264: 87-93; newly cited) in view of Rajeevan et al. (Journal of Molecular Diagnosis (2001) 3(1): 26-31; newly cited) and further in view of Adra et al. (Proceedings of the National Academy of Sciences (1994) 91: 10178-10182; cited on the IDS).

Nowicki as evidenced by Ishibashi teaches the method of claims 1, 2, 4, 5, 10, 11, and 13-16.

Regarding claim 6, Nowicki teaches conducting RT-PCR to confirm the array hybridization results (page 3953, column 1), but the reference does not teach RT-PCR amplification of the HTm4 gene.

Rajeevan teaches that RT-PCR should be used to validate the results of array hybridization studies (abstract, page 26, and page 30).

As evidenced by Adra, the sequence of the HTm4 gene was known in the art at the time of the invention (abstract and Figure 3).

It would have been *prima facie* obvious for one of ordinary skill in the art at the time of the invention to amplify HTm4 mRNA by RT-PCR when practicing the method of Nowicki. The ordinary artisan would have been motivated to do so, since Nowicki and Rajeevan each taught that RT-PCR should be used to validate the results of array hybridization studies (page 3953, column 1 of Nowicki and the abstract, page 26, and page 30 of Rajeevan). The ordinary artisan would have had a reasonable expectation of success in doing so in view of the guidance concerning RT-PCR provided by Rajeevan and Nowicki (pages 27-28 of Rajeevan and pages 3961-3962 of Nowicki) and also in view of the fact that the sequence of the HTm4 cDNA was

known in the art at the time of the invention (see Figure 3 of Adra). Thus, the method of claim 6 is *prima facie* obvious in view of the combined teachings of the cited references.

Response to Arguments

12. Applicant's arguments filed on February 1, 2011 have been fully considered.

Objections to the Specification

Applicant argues that the previously made objection has been obviated by the amendments to the specification (page 8). This argument is persuasive, and, accordingly, the objection has been withdrawn.

Claim Objections

Applicant argues that the previously made objection has been obviated by the claim amendments (page 8). This argument is persuasive, and, accordingly, the objection has been withdrawn.

Rejection of claims 1-6 and 9-16 under 35 U.S.C. 112, first paragraph (scope of enablement)

Applicant argues that the previously made rejection has been obviated by the claim amendments (page 9). This argument was not persuasive, because, as discussed in the modified rejection, claims 1-6 and 9-16 do not comply with the enablement requirement. As discussed in greater detail in the modified rejection, these claims encompass detecting the presence of any granulocyte disorder based on any statistically significant change in the expression level of the HTm4 gene, but the specification fails to demonstrate an association between altered HTm4 expression and even one granulocyte disorder. The prior art does not remedy the deficiencies in

the specification concerning the full scope of the claimed methods, and, given the level of unpredictability inherent in associating a particular gene with a particular disorder, the ordinary artisan would be required to conduct undue experimentation to practice the full scope of the claimed methods. Accordingly, the rejection has been maintained with modifications to address the claim amendments.

Rejection of claims 1-6 and 9-16 under 35 U.S.C. 112, second paragraph

Applicant argues that the rejection has been obviated by the claim amendments (page 9). This argument was persuasive, and, accordingly, the previously made rejection has been withdrawn.

Rejections of claims 1-6, 9-16, and 49 under 35 U.S.C. 102

Applicant argues that all of the rejections made previously under 35 U.S.C. 102 have been obviated by the claim amendments, which require detection of particular granulocyte-selective markers not described in the previously cited references (pages 9-10). Applicant's argument was persuasive with respect to: (1) the rejection of claims 1, 2, 4-6, 9, 11, and 13-15 under 35 U.S.C. 102(b) as being anticipated by Yawalker, (2) the rejection of claims 1-6, 10, 12, and 13 under 35 U.S.C. 102(b) as being anticipated by Csiszar in viwe of Courtney, and (3) the rejection of claim 49 under 35 U.S.C. 102(b) as being anticipated by Schroeder. These references do not teach detected of the elected HTm4 gene, and, accordingly, these rejections have been withdrawn.

Applicant's argument was not persuasive with respect to the rejection under 35 U.S.C. 102(a) citing Nowicki, however. In view of the claim amendments, the rejection currently applies to claims 1, 2, 4, 5, 10, 11, and 13-16. The rejection is not obviated by the claim

amendments, because, as discussed above, Nowicki teaches that the MS4A3 gene, which, as evidenced by Ishibashi, is synonymous with the elected HTm4 gene, is down-regulated to a statistically significant degree in bone marrow samples from CML patients, and, therefore, indicative of the presence of this granulocyte disorder. Accordingly, the rejection has been maintained with modifications necessitated by the claim amendments.

Conclusion

13. No claims are currently allowable.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. Bertagna whose telephone number is (571)272-8291. The examiner can normally be reached on M-F, 9- 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Angela M Bertagna/
Examiner, Art Unit 1637

/Young J Kim/
Primary Examiner, Art Unit 1637